

AMENDMENTS TO THE CLAIMS

The following is a complete listing of the claims indicating the current status of each claim and including amendments currently entered as highlighted.

1. (Currently Amended) An automatic fire sprinkler device comprising:
an automatic fire sprinkler for fluidly communicating with a water flow-path of an automatic fire sprinkler system, and
an orifice associated with said automatic fire sprinkler,
said orifice being responsive to a water inlet pressure of said orifice, so as to provide a plurality of different, open cross-sections for a flow of water therethrough, as a function of said water inlet pressure, pressure.
such that each open cross-section of said open cross-sections uniquely corresponds to a particular, unique water inlet pressure.

2. (Currently Amended) The automatic fire sprinkler device of claim 1, wherein a flow-rate of said water through said open cross-sections of said orifice is characterized by a formula:

$$Q = K^*(p)^{1/2}$$

wherein Q is said flow-rate,

p is said water inlet pressure, and

K is a coefficient dependent upon a geometry of the sprinkler,

K further being a function of said pressure p,
so as to provide said plurality of open cross-sections.

3. (Withdrawn) The automatic fire sprinkler of claim 2, wherein said function is substantially linear.

4. (Withdrawn) The automatic fire sprinkler of claim 2, wherein said function is substantially parabolic.

5. (Withdrawn) The automatic fire sprinkler of claim 2, wherein said function is substantially exponential.

6-24. (Canceled)

25. (Previously Presented) The automatic fire sprinkler device of claim 2, wherein said orifice includes a flow-impeding element for impeding said flow, said flow-impeding element being responsive to said water inlet pressure.

26. (Previously Presented) The automatic fire sprinkler device of claim 2, wherein said water flow-path is a specific water flow-path.

27. (Previously Presented) The automatic fire sprinkler device of claim 25, wherein the device further comprises a housing installed in said water flow-path ahead of said sprinkler, said housing for housing said flow-impeding element and for operatively connecting said sprinkler to said automatic fire protection system.

28. (Previously Presented) The automatic fire sprinkler device of claim 25, wherein said flow-impeding element is disposed within said sprinkler.

29. (Previously Presented) The automatic fire sprinkler device of claim 25, wherein said flow-impeding element is anchored to said sprinkler.

30. (Previously Presented) The automatic fire sprinkler device of claim 25, wherein said flow-impeding element includes a damping mechanism, said damping mechanism responsive to said water pressure.

31. (Previously Presented) The automatic fire sprinkler device of claim 25, wherein said flow-impeding element includes at least one movable segment disposed within said water flow-path, said segment configured so as to decrease said cross-sectional area with decreasing of said pressure.

32. (Previously Presented) The automatic fire sprinkler device of claim 31, wherein said at least one segment within said water flow-path is a plurality of segments.

33. (Previously Presented) The automatic fire sprinkler device of claim 32, wherein said plurality of segments shares a common base.

34. (Previously Presented) The automatic fire sprinkler device of claim 32, wherein said segments are radial segments, said plurality of segments designed and configured to move from an open configuration towards a closed configuration as a decreasing function of said water inlet pressure, so as to reduce said cross-sectional area of said water flow-path.

35. (Currently Amended) The automatic fire sprinkler device of claim 25, wherein said flow-impeding element is self-adjusting, based on said water inlet pressure, so as to decrease said cross-sectional area of said water flow-path as a function of a decrease in said water inlet pressure, so as to maintain said orifice in an intermediately open position.

36. (New) The automatic fire sprinkler device of claim 1, wherein said orifice includes a flow-impeding element for impeding said flow, said flow-impeding element being responsive to said water inlet pressure so as to decrease said cross-sectional area of said water flow-path as a function of a decrease in said water inlet pressure, so as to maintain said orifice in an intermediately open position.

37. (New) An automatic fire sprinkler device comprising:
an automatic fire sprinkler for fluidly communicating with a water flow-path of an automatic fire sprinkler system, and
an orifice associated with said automatic fire sprinkler,
said orifice being responsive to a water inlet pressure of said orifice, such that said orifice provides a plurality of different, open cross-sections for a flow of water therethrough, as a function of said water inlet pressure,
such that each open cross-section of said open cross-sections represents a stable, equilibrium cross-section uniquely corresponding to a particular, unique water inlet pressure.

38. (New) The automatic fire sprinkler device of claim 37, wherein said orifice includes a flow-impeding element for impeding said flow, said flow-impeding element being responsive to said water inlet pressure so as to decrease said cross-sectional area of said water flow-path as a function of a decrease in said water inlet pressure, so as to maintain said orifice in an intermediately open position.